Claims

1. A method for the catalytic conversion of carbon monoxide in a hydrogen-containing gas mixture with water to form carbon dioxide and hydrogen comprising passing said gas mixture over a shift catalyst, which is at an operating temperature for the carbon monoxide conversion, said shift catalyst being at least one noble metal that is applied to an inert support in the form of a coating.

2. The method according to Claim 1, wherein the shift catalyst contains at least one of the noble metals platinum, palladium, rhodium, ruthenium, iridium, osmium and gold on an oxide support material selected from the group and consisting of aluminum oxide, silicon dioxide, titanium dioxide, rare earth oxides, mixed oxides thereof and zeolites.

3. The method according to Claim 2, wherein the shift catalyst contains at least one rare earth metal as an additional catalytically active component.

4. The method according to Claim 2, wherein the shift catalyst contains at least one non-noble metal of the subgroups of the periodic system of elements as an additional catalytically active component.

5. The method according to Claim 4, wherein the oxide support material is doped with a redox-active oxide of a metal selected from the group consisting of cerium, zirconium, titanium, vanadium, manganese and iron in an amount of 1 to 50 wt% with respect to the total weight of the support material.

6. The method according to Claim 5, wherein the shift catalyst contains platinum and/or palladium together with iron or copper as well as cerium oxide on finely divided aluminum oxide.

7. The method according to Claim 1, wherein a honeycomb element of ceramic or metal, open-cell, ceramic or metallic foam elements, metal sheet, heat exchanger plates or irregularly shaped elements is a carrier.

8. The method according to Claim 7, further comprising passing the gas mixture over the catalyst at a space velocity between an idling space velocity and 100,000 h^{-1} and at a pressure between atmospheric pressure and 10 bar, where the space velocity refers to the volume of the carrier coated with the catalyst.

9. The method according to Claim 8, wherein the temperature of the shift catalyst lies between 180 and 300°C.

10. The method according to Claim 9, wherein the gas mixture contains 2 to 15 vol% carbon monoxide.

11. The method according to Claim 8, wherein the operating temperature of the shift catalyst lies between 280 and 550°C.

12. The method according to Claim 8, wherein the shift catalyst with an operating temperature between 280 and 550°C is another shift catalyst with an operating temperature between 180 and 300°C and that the gas mixture is cooled to the operating temperature of the additional catalyst before contact with it.

13. The method according to Claim 11, wherein the gas mixture contains 2 to 40 vol% carbon monoxide.